

July 13, 1951.

Dear Stan:

I hope the new set of 58-161 and W-1177 arrived ok.

If you've still kept them, I wonder if you would be willing to send me some sets of your *Aerobacter* mutants that you said were not crossable. Norton Zinder has gotten some leads on the mechanism of recombination in *Salmonella* that I'd like to follow up in other related groups of bacteria, and your material would save some time. If you'd rather hold on to it to follow it up yourself, just say so: it'll be perfectly all right with me. What I should like to have where possible is a wild type strain plus two non-overlapping double mutants from it. I have the impression that you have made up such sets in a number of distinct strains.

Do you remember the problem you started to work out in the lab here- making mutants in other coli strains for crossing tests? By crossing W-1177 with wild types on minimal streptomycin agar ($S^- T-L^- \times S^+ T-L^+$, selecting for $S^+ T-L^+$) we have been able to save most of the work, and have isolated about 25 new strains (out of 750 tests) that will cross with K-12. They seem to be of all different antigenic types, and there is no obvious pattern so far with which to recognize a cross-fertile strain without testing it directly. I'm hoping to have a postdoctoral fellow come in and do the immunogenetics.

If you haven't heard about it already, and are still working on isolating mutants or other genetic work, we've developed a new technique that saves a tremendous amount of work for some needs. It involves using sterilized velvet or velveteen discs to print bacterial colonies from one plate to an unlimited series of others. The velvets are mounted on a wooden cylinder, nap up, with the help of a circular hoop. Then, a plateful of colonies is brought down on the velvet, transferring them to its flat surface. This can then be used to print a series of other plates (EMB different sugars; complete and minimal medium; etc.) One general application has been to show that phage- (and, we hope also drug-) resistant mutants occur in preexisting clones in films of bacterial growth on agar plates. Transferring the films to successive phage-coated plates results in a large portion of congruent resistants, which can only mean that resistant clones had been there to begin with. This may help to clear up that vexatious problem of ~~inducement~~ directed vs. selected mutations to resistance, in words of few syllables. I have always had trouble teaching this, especially to students who have had quite some bacteriology before.

Sincerely,

Joshua Lederberg